

Fiber-Coupled Multiplexed Confocal Microscope

Abstract

A confocal microscope system that is inherently fiberoptic compatible is described which has line scanning aided image formation. An incoherent fiberoptic bundle maps a line illumination pattern into a dispersible group of separate sources, and then remaps this confocally selected remitted light to the original line. Fibers, not confocal with the illumination, carry light to be rejected from the image back on itself upon double passing, while separate fibers carry light from non-confocal sample planes. The transformation allows efficient rejection of unwanted photons at a slit aperture. The fiber bundle and an objective lens provide a flexible probe for imaging internal tissue for pathological examination on a cellular level.

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